

IN THE CLAIMS

Claim 1 (**currently amended**). A method for the continuous polymerization of vinyl monomers to vinyl polymers, wherein the polymerization takes place in a **planetary roller extruder** hydraulically filled planetary roller extruder and the polymerization

a) is carried out by thermally induced decomposition of free radical-forming initiators,

b) takes place in the presence of 0 to 25% by weight, based on the vinyl monomers of a solvent, and/or

c) is carried out in the presence of resin or plasticizers in fractions of 0 to 30% by weight.

Claim 2 (previously presented). The method for continuous polymerization of vinyl monomers to vinyl polymers of claim 1, wherein the vinyl polymers have a molecular weight M_w of more than 400 000 g/mol and/or polydispersities (M_w/M_n) of greater than 5.

Claim 3 (previously presented). The method of claim 1, wherein the polymerization takes place without addition of solvent.

Claim 4 (**cancelled**). ~~The method of claim 1, wherein said planetary roll extruder is a hydraulically filled planetary roll extruder and the polymerization~~
~~— a) is carried out by thermally induced decomposition of free radical-forming initiators,~~
~~— b) takes place in the presence of 0 to 25% by weight, based on the vinyl monomers of a solvent, and/or~~
~~— c) is carried out in the presence of resin or plasticizers in fractions of 0 to 30% by weight.~~

Claim 5 (**currently amended**). The method of claim ~~4~~ **1**, wherein the hydraulic filling of the planetary roller extruder with reaction mixture takes place by means of

- a) ~~the material exit aperture of~~ the planetary roller extruder **having a material exit aperture which is being** situated higher than the maximum fill level of the reaction mixture within the roller barrels,
- b) central spindle and planetary spindles rotate counter to the material conveying direction normally induced by the helical gearing, the conveying of the reaction mixture within the planetary roller extruder then taking place by means of ~~the preferred~~ **a** feed pump for the vinyl monomers.

Claim 6 (previously presented). The method of claim 1, wherein the mixture of the vinyl monomers is preheated, prior to entering the planetary roller extruder, to temperatures of more than 50 °C.

Claim 7 (previously presented). The method of claim 1, wherein the initiators are cooled and are added to the vinyl monomers not until immediately before entry of the monomer stream into the planetary roller extruder.

Claim 8 (previously presented). The method of claim 1, wherein further initiators are added at at least one further site downstream of the process section of the planetary roller extruder.

Claim 9 (previously presented). The method of claim 1, wherein the initiators for initiating the reaction have half-lives of 10 hours at temperatures of less than 120 °C and are selected from the group consisting of azo initiators, organic peroxides, and mixtures thereof.

Claim 10 (previously presented). The method of claim 1, wherein initiators are added downstream of the process section, said initiators having half-lives of 10 hours at temperatures of more than 50 °C and being selected from the group consisting of azo initiators, organic peroxides and mixtures thereof.

Claim 11 (previously presented). The method of claim 1, wherein the vinyl monomers contain compounds and/or the reaction mixture which has already been initially polymerized is supplied with compounds which lower the molecular weight during the polymerization, said compounds being selected from the group consisting of nitroxyl compounds, thiols, TEMPO derivatives, thioesters, thiocarbonates, alcohols, ethers, and halogenated hydrocarbons, and are present in amounts of 0 to 5% by weight, with respect to the vinyl monomers employed.

Claim 12 (previously presented). The method of claim 1, wherein liquid resins, resin melts or plasticizers are added in amounts of 0 to 30% by weight, to the reaction mixture after the beginning of polymerization.

Claim 13 (previously presented). The method of claim 1, wherein more than 30% of the vinyl monomers are reacted to vinyl polymers.

Claim 14 (previously presented). The method of claim 1, wherein the vinyl polymers are freed from their volatile constituents.

Claim 15 (previously presented). The method of claim 1, wherein the vinyl polymers are admixed inline with further substances selected from the group consisting of tackifying resins, fillers, crosslinkers and crosslinker assistants and, in this way, vinyl polymer compounds are prepared which find use as pressure-sensitive self-adhesive compounds.

Claim 16 (previously presented). The method of claim 1, wherein the vinyl polymers are used in a downstream process stage as vinyl prepolymers for producing pressure-sensitive self-adhesive compounds.

Claim 17 (previously presented). The method of claim 1, wherein the vinyl polymers are applied inline to the production operation to carrier materials in web form.

Claim 18 (**currently amended**). The method of claim ~~4~~ 1, wherein said fraction of resin or plasticizer is 0 to 10% by weight.

Claim 19 (previously presented). The method of claim 18, wherein said fraction of resin or plasticizer is 0 to 5% by weight.

Claim 20 (previously presented). The method of claim 6, wherein said temperatures are above 70°C.

Claim 21 (previously presented). The method of claim 20, wherein said temperatures are above 85°C.

Claim 22 (previously presented). The method of claim 9, wherein said initiators have a crosslinking efficiency of less than 20%.

Claim 23 (previously presented). The method of claim 22, wherein said initiators have a crosslinking efficiency of less than 10%.

Claim 24 (previously presented). The method of claim 11, wherein said compounds which lower the molecular weight are present in amounts of 0 to 3% by weight.

Claim 25 (previously presented). The method of claim 24, wherein said compounds which lower the molecular weight are present in amounts of 0 to 1% by weight.

Claim 26 (previously presented). The method of claim 14, wherein said vinyl polymers are freed from their volatile constituents inline.

Claim 27 (previously presented). The method of claim 15, wherein the vinyl polymer compounds are applied inline to the production operation to carrier materials in web form.